REMARKS

Allowance of claims 5-11 is acknowledged. Claim 1 is amended to disclose that the flexible body is in the form of a coil and is implanted into tissue. That the body includes a coil is shown in the drawings.

APPLICANT'S INVENTION

Applicant's invention is directed to an agent delivery system and a method for delivering a therapeutic agent into tissue. The system includes a cage-like coil that is implanted into tissue (as distinguished from a natural lumen of the body), and a therapeutic agent is placed within the interior of the cage so that bodily fluids can enter the interior of the cage and come in contact with the agent.

The delivery system includes a pellet 14 or gel containing a therapeutic agent, and a flexible, implantable body 2 with a hollow interior 6 (page 4, lines 17-19 and 26-28; page 1, lines 1-3 and 11-14). The implantable body is implanted in the tissue 3 to be treated with the agent, and the pellet is placed within it. The implantable body is configured to hold the pellet after implantation. The implantable body can be a coiled spring such as that shown in Fig. 2 (below), where the individual coils hold the pellet in place and are spaced so as to allow bodily fluids such as blood to enter the interior of the coil body, pool, and come in contact with the pellet (page 4, lines 17-19; page 7, lines 12-14). The coils can be smaller at one or both of the ends, to keep the pellet within the implantable body.

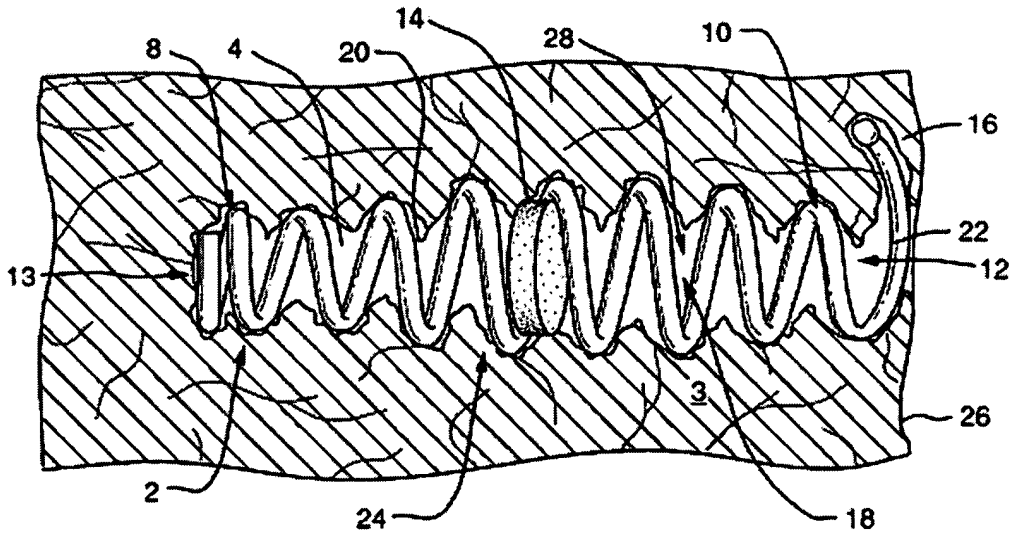


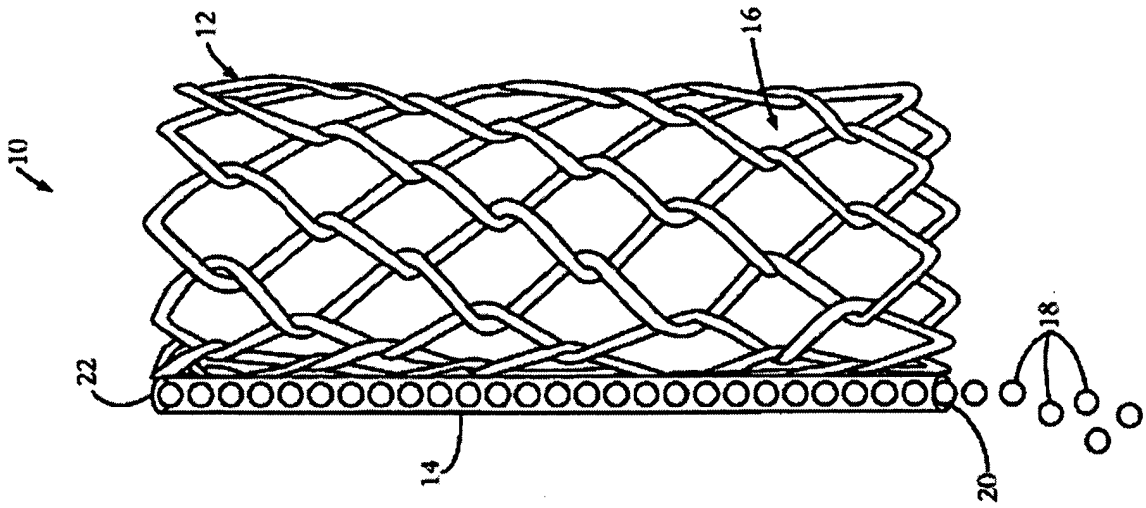
FIG. 2

The invention can also include an implant delivery device, the claims to which have been allowed.

THE CITED ART

Hayman *et al.* (U.S. Pat. No. 6,192,271; "Hayman")

Hayman discloses a radiotherapy stent 10, that is, a stent containing radioactive material and adapted for placement in the existing lumen of a blood vessel so that radiation can be delivered to the surrounding tissue. As with other stents, it has a collapsible mesh body 12. Unlike other stents, round pellets 18 made of radioactive material are contained in one or more hollow sleeves 14 running lengthwise along the stent, (see Fig. 1, below). The sleeves have at least one open end 20 through which the radioactive pellets 18 are loaded (column 3, lines 51-53), after which the open ends 20 are sealed to prevent the escape of the radioactive material (column 3, lines 59-62). The stent is then ready to be implanted in a blood vessel.



Alternatively, the radioactive material can be in the form of strings rather than pellets, for instance, a continuous string of tiny cylindrical bodies secured end to end, or a radioactive wire (column 4, lines 31-37). After the radioactive strings or wires are loaded into the sleeves, the ends of the sleeves are sealed (column 4, lines 54-56).

The drawings appear only to show the pellet loading process, not that the pellets 18 are released from the sleeves after the sleeves are sealed. There is no teaching or suggestion that the radioactive materials within the sleeves are exposed to bodily fluids, or that the sleeves are open in any way after the device is implanted.

Peiler *et al.* (U.S. Pat. No. 6,036,666

Peiler discloses a medicated tampon by which a medication is carried into then expelled into the vaginal cavity. It includes a tampon assembly, as shown in Fig. 3, below, which includes a tampon body 12, a medicament 20 and a wand/inserter 16.

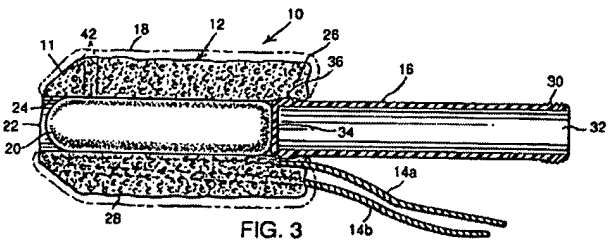


FIG. 3

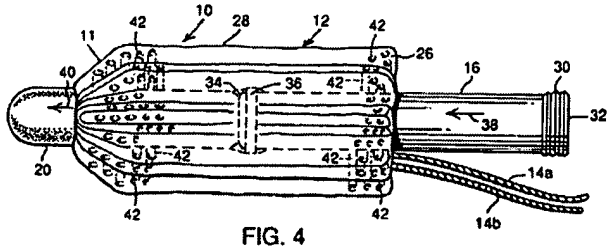


FIG. 4

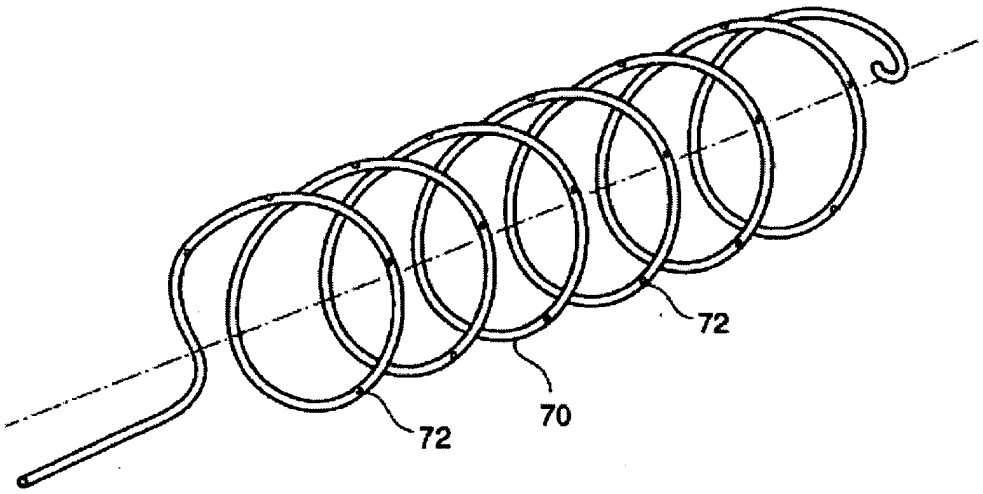
Operation of the device is shown in Figs. 3 and 4, and is described in the text:

> . . . the insertion of the tampon assembly 10 into the vaginal cavity . . . is performed in the conventional manner . . . . As is indicated by the arrow 38, the wand 16 is moved so that the closed end 34 passes along the bore 22, ***thus moving the medicament 20 out of the bore 22, as is indicated by the arrow 40. At such time as the medicament 20 is completely expelled from the bore 22,*** the movement of the wand 16 with dosage measurement scale 51 in the direction shown by the arrow 38 is terminated, and the wand 16 with dosage measurement scale 51 then moved in the opposite direction to the movement shown by arrow 38, until the wand is completely withdrawn from the tampon body and is then further withdrawn from the vaginal cavity. ***Thus, upon expulsion of the medicament 20 from the tampon body 12*** with rounded front end 11 as above described, and the withdrawal of the wand 16 with dosage measurement scale 51 from the tampon body 12 with rounded front end 11 and the vaginal cavity, the medicament 20 is dissolved within the vaginal cavity as well as sealing the vaginal cavity to maintain the medicament 20 therewithin.
>
> (column 6, line 63 to column 7, line 30, emphasis added).

As described in the text, the medicament is not retained within the tampon. The tampon is used as a plug to "seal" the vaginal cavity to keep the medicament in place.

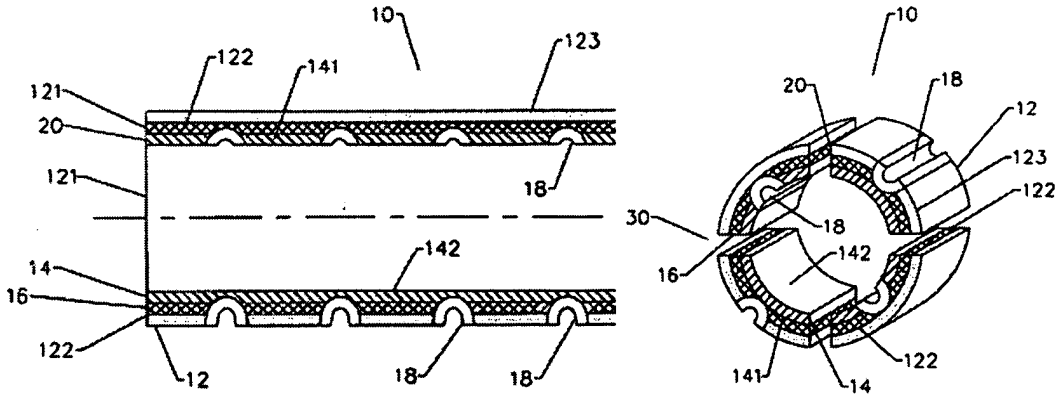
Leone *et al.* (U.S. Pat. No. 5,891,108; "Leone")

Leone discloses an expandable tubular stent 70 for implanting in an existing lumen of a blood vessel, for treating a stenotic lesion on the vessel wall. The stent 70 is formed from hollow wire having multiple perfusion ports 72 formed therein. The distal end of the stent is sealed. When placed in position in a vessel, the proximal end of the stent remains connected to a liquid drug delivery system, or the stent can be permanently implanted in the vessel lumen. Liquid drugs are injected through the delivery system into the tubular wire of the stent. The ports face outwardly (col. 1, lines 47-52) so that after the stent is implanted in a vessel at the site of a stenotic lesion, the drug can be delivered to the lesion.



Fagan *et al.* (U.S. Pat. No. 6,206,915; "Fagan")

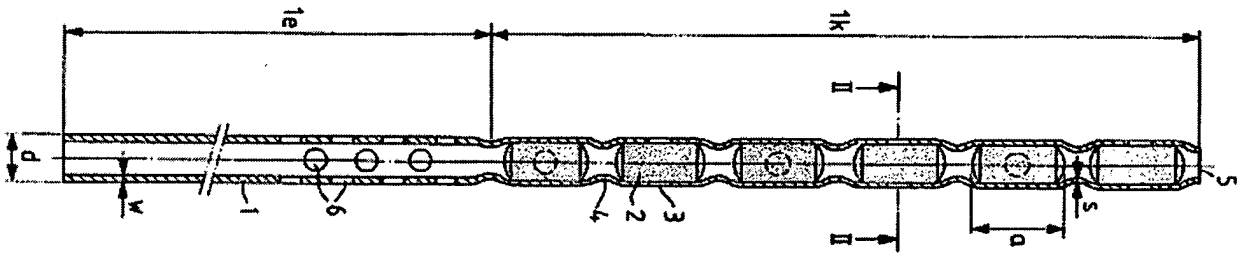
Fagan discloses a drug storing and metering stent 10 for placement within the existing lumen of a blood vessel. The stent comprises a lumen 14 within another lumen 12 (a "tube within a tube"), with a space 16 separating the two. A therapeutic drug, such as a biosorbable gel, is placed in the space 16 between the two lumens (column 2, lines 29-34; column 5, lines 21-27). Perforations 30 are made through all of the layers (Fig. 3, on right). The pattern of perforations 30 made provides the stent with the ability to be expanded within a blood vessel (col. 2, lines 54-60), and allows the drug to be exposed (col. 5, lines 36-41). The stent is then expanded within an existing blood vessel, so that blood can flow through the stent.



Billeter *et al.* (U.S. Pat. No. 4,731,054; "Billeter")

Billeter discloses a medical repository probe/drainage tube, which is intended to also dispense medication. The probe is in the form of a hollow tube 1 formed with solid walls with segments along its length separated by flexible joint zones formed by constrictions 4 in the tubular probe body (see, *e.g.*, Fig. 1, below). The segments between the constrictions are intended to be loaded with medicine carriers 2, and the medicine leaches into the surrounding tissue via holes 3 in the sidewall of the probe.

The probe can be inserted into muscle tissue (column 1, lines 32-40) or bodily lumens (column 1, lines 41-45). The probe also functions as a drainage tube, and allows tissue secretions to drain through holes 6 into the probe interior, where they are carried away by a suction system (column 2, lines 55-61). The device must therefore remain in fluid communication with the outside of the patient's body (see, *e.g.*, column 2, lines 34-66; column 4, lines 16-21 and 33-47).



The Billeter does not disclose leaving the device within the patient's body, rather, it is clearly indicated that the device is intended to be removed at a later date (see, *e.g.*, column 2, lines 26-29 and column 5, lines 16-18).

Kallok (U.S. Pat. No. 4,479,796; "Kallok")

Kallock discloses a cylindrical device that can be placed inline in an existing lumen of a blood vessel. The device contains a replaceable cartridge containing microspheres which contain microorganisms. The microbes are chosen or engineered to release a drug into the bloodstream as blood flows through the device.

Rejections Under 35 U.S.C. § 103

Reconsideration is requested of the rejections of claims 1-4 as defining subject matter that would have been obvious to one of ordinary skill in the art over the combination of Hayman, Leone, Fagan, Peiler, Billeter and Kallok. Rejection of a claim based on obviousness requires that the references disclose all of the claim limitations and that there be evidence of a motivation to combine those references in the claimed combination. See *MPEP §706.02(j)*. The rejection is based on piecemeal selection of elements from various references having little or no relation to each other without any explanation, reasoning or evidence of a motivation to make the claimed combination.

Claim 1 defines a system for delivering an agent to tissue, where the system includes (1) a flexible coiled body which is (2) implantable into tissue, and which has (3) a pellet containing a therapeutic agent (4) held within the interior defined by the coils, so that (5) bodily fluids can enter the interior of the coiled body and come in contact with the pellet.

The rejection acknowledges that the Hayman patent does not disclose the claimed flexible coil body and a pellet held within the interior of the body defined by the coils and arranged so that body fluids can enter the interior of the coil body to contact the pellet. Additionally, although not noted by the action, there is nothing in Hayman to suggest the device should or might be implanted within tissue, as distinguished from placement of the device within an existing lumen in the body. These features of applicants' claimed invention are essentially ignored by the action which characterizes them as "structural and functional enhancements...conventional in view of...Leone et al., Fagan et al., and...Kallok." Merely characterizing claim limitations as "conventional" is no basis for an obviousness rejection. Here, there is no evidence or reasoning demonstrating why one of ordinary skill would have been motivated to combine the various teachings of Hayman and Leone or Hayman and Fagan or Kallok. While the references do share the common feature of being vascular stents intended and adapted for placement within the lumen of an existing vessel, there is nothing in any of them to suggest adaptation for or a capability for implantation into tissue. None of Hayman, Leone, Fagan and Kallok discloses the claimed flexible coil body with a pellet containing a therapeutic

agent that is held within the interior of the coil by the coils and there is nothing evidenced in the rejection of any motivation to so modify any of those references to make that combination. To the contrary, Hayman, Leone, Fagan and Kallok, if anything, teach away from the notion of caging a therapeutic-bearing pellet within the interior of a coil because where those stents are placed in a body lumen, to do so would obstruct flow through the lumen, precisely the opposite result desired when placing a stent in a body lumen such as an artery. (See Hayman at 1:4-17).

Leone provides no basis for the speculative conclusion that pellets could be placed in the body using a coil stent to retain the pellets within the coils. Leone merely discloses a coil-shaped stent formed from a tube with outlets along the length of the tube by which a liquid can be delivered. An obviousness rejection based on speculation is improper.

Peiler discloses a medicated tampon containing a pellet, for delivering medicaments to the vaginal area. The tampon is inserted, and the pellet is pushed through and out of the tampon and into the vaginal cavity. The medicament is not retained within any structure upon implantation. Rather, the tampon acts as a plug to prevent leakage of the medication from the vaginal cavity. Peiler therefore discloses the delivery of a pellet, nothing more. Moreover, there is nothing in the action to support the combination of a medicated tampon device (Peiler) with stents adapted for placement within blood vessels. They are in unrelated arts and are not directed to the same problem. The combination of Peiler with any of Hayman, Leone and Kallok evidences improper hindsight reasoning in light of applicants' invention.

Billeter and Kallok also do not teach a coiled implant, and so cannot teach that a therapeutic agent is retained within a coil.

Furthermore, the claims cannot be obvious in light of the references because modification of the referenced devices as suggested by the examiner would render the cited devices non-functional for their intended purposes.

"If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification" (MPEP § 2143.01, citing *In re Gordon*, 733 F.2d 900, 221 USPQ 1125

(Fed. Cir. 1984)), and "[i]f the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious." (MPEP § 2143.01, citing *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959)).

Modification of the Leone and Fagan devices as suggested in the action would render them unsatisfactory for their various stated purposes. Leone discloses an expandable tubular stent for treating a stenotic lesion in a blood vessel, formed from a tubular wire and filled with a drug, with perfusion holes facing outwardly, so that the drug can leach into the vessel wall after implantation. Placing a drug pellet within the space formed by the helical coils would result in obstruction of the lumens or, alternately, the drug being swept away in the bloodstream, rather than being administered locally. Fagan discloses a stent formed of two layers of material, with a drug layered in between them. There is no indication in this reference, and the action provides no reasoning, that a pelleted drug placed within the inner member of the stent would remain there. It too, would be swept away in the bloodstream or serve as an obstruction to flow.

The claims were also rejected on the reasoning that placement of the agent within the space defined by the coils is a "design choice" (page 3 of the action). However, "design choice" is not a grounds for rejection under 35 U.S.C. §103.

As stated in the specification, the helical coils allow tissue to collapse around the device after implantation and herniate in between the coils so that the tissue both engages the pellet and prevents migration of the device (specification, page 8, lines 4-11). The coils are functional and do not present a "design choice." Design choices are discussed in the Manual of Patent Examining Procedure (MPEP) § 2144.04(VI)(C), but only insofar that they constitute a rearrangement of parts. Applicants' claims cannot represent a "rearrangement of parts," because the cited references fail to disclose all of the parts disclosed in applicants' claims.

The action also rejected claims 3 and 4 on the reasoning that the Billeter reference teaches the importance of altering the diameter of the tube in order to restrict the movement of

the pellets. Billeter fails to disclose either a coiled implant, or retention of the therapeutic agent within the coil. None of the references cited discloses retention of a pelleted therapeutic agent within the diameter of a coil. The references, even if somehow combined, cannot render this feature obvious.

For the reasons cited above, a *prima facie* case of obviousness has not been established, and applicants request that the rejection on this basis be reconsidered and withdrawn.

Applicants of the claims are now in condition for allowance. Please apply any charges or credits to Deposit Account No. 50-1721.

Respectfully submitted,

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